

Ellipso isn't standalone system, Castiel said. Rather, company plans to complement existing U.S. cellular infrastructure so that "anyone who has a [cellular] phone and is a customer of a cellular company" can use service. "Other systems require the end user to choose between cellular or satellite; we enable both," he said. Castiel plans to offer service to cellular companies at same price as they pay for terrestrial service. It then would be left to cellular companies to set price for end user.

Ellipsat would be network organizer, with "value-added partners" providing service. Company said partners may include cellular companies that plan to offer subscribers extended geographical coverage in remote areas, or those serving "specialized industries." Users would receive satellite service with "add-on" device for existing cellular equipment that company said would be available at "nominal cost" or by purchasing combined satellite/cellular unit.

System is most recent in series involving MSS that plan to rely on smallsats (generally, birds weighing less than 1,000 lbs.). Closest competitor is Motorola, which plans to launch satellite-cellular system using 77 low earth orbit spacecraft. Hybrid would provide worldwide mobile services, with automatic, seamless handoffs between cellular telephones and satellites and from satellite to satellite.

High-Power Hybrids

PANAMSAT SEEKS MORE SATELLITE CAPACITY FOR PACIFIC

PanAmSat filed at FCC Nov. 8 for authority to construct, launch and operate 2 more satellites -- PAS 4 and PAS 5 -- in Pacific Ocean Region (POR) (194° W, 192° W). Satellites, which would be PanAmSat's 4th and 5th spacecraft, follow application Oct. 17 for PAS-3 (39.5° W) (SW Oct 29 p8). Company said aggregate cost for construction, launch and first-year operation of PAS-4 and PAS-5 will be \$172 million and \$164 million, respectively. Company said Donaldson, Lufkin & Jenrette, N.Y., will assist it in raising funds through "appropriate mix of debt and equity."

Birds are to be high-power hybrids capable of full-frequency reuse on C- and Ku-band. Both bands will be used to provide international service between west coast of U.S. and all major points in Pacific Basin and as far west as Thailand and Singapore. In addition, because of overlap in L.A. area between footprints of PAS 4 and 5 and PAS 1 and 2 (Atlantic Ocean Region), PanAmSat said it will be able to provide interconnected service between Europe and Far East. It said several non-U.S. domestic communications services will be offered in E. Asia and Pacific Basin.

Satellites' design will be based on either Hughes Aircraft HS-601 or GE Astro 5000/7000 series, PanAmSat said. Satellites would be 3-axis stabilized spacecraft combining high-powered amplifiers with large stationary antennas. PAS-4 and PAS-5 could have 40 transponders, with 24 in C-band, 16 in Ku-band.

"At present, there is no meaningful competition to Intelsat's monopoly over international satellite services between the United States and Asia," PanAmSat filing said. Company acknowledged Columbia Communications' request for authority to provide POR C-band service using leased capacity on NASA's Tracking & Data Relay Satellite, but said grant of that application would result in "only a modest degree" of competition because of "severely restricted C-band capacity."

Commission has granted conditional authorizations to Columbia, Financial Satellite Corp. and McCaw Space Technologies to establish POR separate systems, but they haven't initiated Article 14(d) coordination process with Intelsat or reached agreement with foreign party, PanAmSat said.

Company said it has held discussions with launch companies that can boost payloads of up to 3,000 lbs. Selection criteria include scheduling, launch price, reliability. Tracking, telemetry and control would be handled from new facility to be constructed on West Coast of U.S. Most of earth stations used to operate satellites would be on PanAmSat customer premises, company said, on West Coast of U.S., E. Asia, Pacific Basin. Number will be determined by demand, it said.

Aussat To Be Sold

AUSTRALIA USES U.S.-U.K. APPROACH IN TELECOM PRIVATIZATION

Australia appears to have borrowed many U.S. and U.K. regulatory approaches in deciding to privatize Telecom Australia, nation's govt.-run telco, and to merge it with Overseas Telecommunications Corp. (OTC), nation's overseas carrier. Labor Party govt. has decided to create U.K.-style duopoly system with

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Firms Covet Geostar's L-Band Frequency

By DANIEL J. MARCUS
Space News Staff Writer

WASHINGTON — Motorola Inc., which intends to offer worldwide cellular telephone service via satellite, and two other companies have called on the Federal Communications Commission (FCC) to open Geostar Corp.'s coveted satellite transmission frequency for use by other

satellite systems.

Recent legal pleadings to the FCC are in response to Geostar's requests to modify its FCC license so the Washington company can redesign its locating and message-transfer satellites. Geostar requested the changes in the wake of changing market demand for its service and growing financial difficulties, according to company

officials.

However, statements filed by Geostar's competitors claim the company is incapable of providing the satellite service and of using the frequency efficiently. As a result, the FCC should allow other firms to use the portion of the L-band frequency allocated to Geostar, they contend.

At stake is access to a highly coveted

piece of the L-band frequency that is used for mobile satellite services, a rapidly growing market for communications services in the United States.

Geostar has reopened a heated debate over the potential users of the frequency, industry analysts said. A new entrepreneurial proposal contends that it can pro-

See FCC, Page 28

Europeans Want U.S. Launch Market Access: Threaten Retaliation

By PETER B. de SELDING
Space News Staff Writer

BRUSSELS, Belgium — American and European officials negotiating a trade agreement on launch vehicles said last week they may discuss also opening the launch market for U.S. government satellites to foreign companies.

The statements came amid threats of retaliation by European officials who say they are barred from competing for most of the U.S. government's launch business. Meanwhile, they say, American rocket companies regularly compete and win the launch contracts of European governments.

"The opening of the government satellite market in the U.S. is essential," Charles Bigot, chairman of Europe's Ariane-space consortium that operates the Ariane booster series, told a November 7 press conference here during the Technospace symposium.

"If it does not happen, the Europeans are going to have to

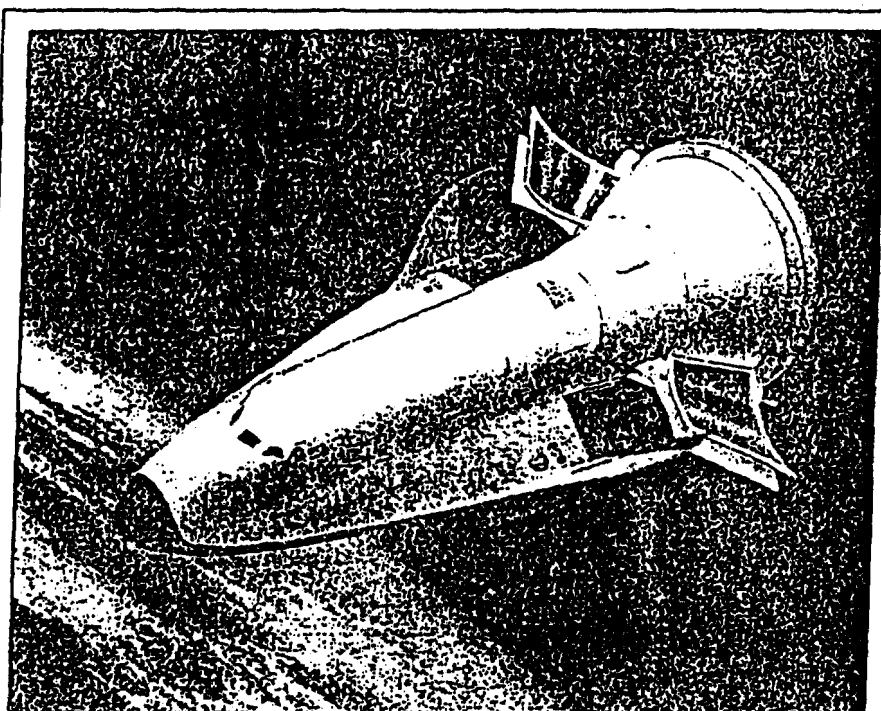
react."

Bigot stopped short of calling for a European embargo on launch bids from American companies. He expressed hope that current U.S. — European negotiations on launch practices would open what he said is a closed American market for the launch of government-owned spacecraft.

But entry into that market "is not on the agenda" right now, said Gerald Musarra, director of commercial space policy at the Office of the U.S. Trade Representative. "That is not to say it will never be. There are much more basic questions to be answered first."

Addressing a separate session of the same conference, George Van Reeth, director of administration at the European Space Agency (ESA), said current American launch policy blocks 80 percent of the U.S. satellite market from European launchers.

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Europe's Hermes space plane program will have a new prime contractor

beginning in mid-1991 when a new consortium, Euro-Hermespace, begins operations. The four European aerospace contractors now developing Hermes created Euro-Hermespace to ease concerns within the European Space Agency about unequal distribution of the project's contracts. See story, page 23.

Major Shake-Up of Agency's Field Centers Urged

NASA FACING THE CHALLENGE OF THE FUTURE

This week: Is the sprawling system of field centers ripe for restructuring?

Next week: The agency's wartime accounting system measures programs' true costs.

SECOND IN A SERIES

By DOUGLAS ISBELL
Space News Staff Writer

WASHINGTON — In 1984, NASA's Ames Research Center began work on a new, all-metal spacesuit to replace the less durable fabric previously used to clad space shuttle astronauts. One year later, NASA's Johnson Space Center started developing a similar advanced suit.

After spending more than \$20 million, mostly at Johnson to feed its much larger overhead costs, the U.S. space agency last year

canceled work on both suits to shave an estimated \$346 million from future space station budgets.

Some features of each suit will be woven into existing designs, but neither will be manufactured or even used as the basis for a lunar or Mars spacesuit. The saga of the canceled spacesuits illustrates the complexities introduced into many space efforts because of NASA's sprawling system of centers.

"Everywhere within NASA, there is this overlapping of responsibilities and redundancies," said one official at NASA headquarters. "Each center has a mass of sharp people who want to do everything."

Yet, despite its success in meeting the nation's most difficult technical challenge of the 1960s, NASA faced the 1970s with few clear goals and even less guaranteed work. Nearly 60 percent of the government and industry workforce supported by the space agency was eliminated.

the field centers for funding and program responsibility, and the associated internal and external political power.

"It became important [for each center] to get pieces of every [NASA] project," said Arthur Levine, a City University of New York professor who has studied the agency for 15 years and is writing a book on its organizational history. "The centers got a different view of planning and lobbying for projects that still exists today."

Twenty years of this process has deflated most of the spirit and cooperation that typified the agency in its early days. This in turn has prompted many space experts outside NASA to question whether the organization that

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Communications Companies Ask FCC To Open L-Band

FCC, From Page 1

wide competing locating service for a fraction of the cost of the Geostar system. The frequency also might be the partial solution to Motorola's search for L-band frequency over which to transmit mobile telephone calls from its multibillion-dollar satellite constellation.

The comments were filed separately by Motorola, Qualcomm Inc., which is Geostar's main competitor, and the new Washington venture called Ellipsat Corp.

In 1986, Geostar was one of four applicants to receive a license from the FCC in Washington to use a limited portion of the L-band frequency for radiodetermination satellite service (RDSS). This service enables privately owned satellites to transmit locating information and limited messages to vehicles in transit and mobile users.

Only Geostar went forward

with its plans to launch a satellite system and became the standard bearer for U.S. service over that frequency. Future RDSS systems over that frequency would be approved only if they did not interfere with the planned services, the FCC concluded.

According to its FCC license, Geostar was required to meet a timetable for construction and launch of three geostationary satellites plus one in-orbit spare by August 1992. The first satellite was to be completed in August.

The FCC approved an extension to the timetable because the 1986 Challenger space shuttle disaster delayed the shuttle launches of the Geostar spacecraft.

Geostar now provides two-way transmission service over two RDSS payloads onboard the GTE Spacenet 3 and GSTAR 3 satellites, owned by GTE Spacenet Corp., McLean, Va.

For the six-month period end-

ing June 30, Geostar lost \$7.78 million, according to company financial statement filed August 14 with the U.S. Securities and Exchange Commission. The company now is searching for new financial backers to stay afloat.

Geostar's latest request to modify its license, filed in May, asks to launch two satellites, plus two spares in 1993 and 1994. These spacecraft each would carry one channel for RDSS transmissions rather than eight as originally conceived.

The FCC originally endorsed the use of eight-channel satellites because they would carry large amounts of transmissions and therefore use the L-band frequency more efficiently, according to one industry official. Geostar's request states that the multichannel satellites are unnecessary until late 1995, when the U.S. RDSS market is expected to have grown.

However, other industry ana-

lysts said the move is designed to save money because each channel placed on a satellite costs at least \$10 million.

Wendy Lincoln, spokeswoman for Geostar, declined to comment on the Motorola comments. The company will file a response with the FCC by late November, she said. A response to Qualcomm's petition was filed November 7.

For now, the FCC has categorized Geostar's request as a license modification rather than a new license request, according to one FCC official.

These comments were due November 5, which was the end of a public notice period lasting 60 days.

Motorola's comments, filed November 5, state that additional systems, such as its future constellation of 77 small satellites, should be allowed access to the Geostar's frequency to increase the use of that L-band frequency.

Its low Earth orbiting satellites, called Iridium, will provide worldwide cellular telephone service. Service is expected to begin in 1996.

The Schaumburg, Ill., company has not yet requested a license from the FCC for its satellite system. It intends to access some portion of the L-band, company officials said.

"Motorola believes that if sufficient flexibility were to be introduced into the RDSS rules, its Iridium technology could provide greatly enhanced RDSS services to tens of thousands of users, employing only a portion of the RDSS [frequency] allocation," the Motorola comments stated.

The filing was prepared by Philip Malet, an attorney at Steptoe & Johnson in Washington. He declined to elaborate on Motorola's plans if the FCC allows other users of the RDSS frequency.

Durrell Hillis, Motorola's general manager for cellular space communications in Chandler, Ariz., was out of town and could not be reached for comment.

Meanwhile, Ellipsat Corp., filed an application with the FCC to launch a satellite constellation that will provide RDSS over the L-band frequency. The constellation, called Ellipso, will consist of 24 satellites located in four elliptical orbits around the Earth.

Initially, six satellites will be launched to provide RDSS at a cost of \$9.7 million, according to the FCC statement, filed November 2. The statement was prepared by Jill Abeshouse Stern, an attorney for the Washington law firm Miller & Holbrooke.

NASA Expected To Postpone One Or More Shuttle Flights in 1991

SHUTTLE, From Page 3

This flight would be followed by the launch of the Gamma Ray Observatory satellite aboard shuttle Atlantis in late March or early April, the official said.

Review team leader John Young, special assistant for engineering operations and safety in the center director at NASA's Johnson Space Center, Houston, declined to comment on results of the review, according to NASA Johnson spokesperson Jeffrey Carr.

Given that each shuttle flight requires more than one million operations in preparation for launch, one incident in 13 months is not unexpected, Lenoir said.

The incidents that triggered the review include a work platform beam left in the aft engine compartment of shuttle Atlantis to a dropped shuttle thrust; and an incorrectly serviced shuttle fuel cell.

"We take all of them very seriously," said Lenoir, explaining his reason for ordering an independent review of the situation.

Ehl said the review team first received a series of status briefings October 22 from senior officials at Lockheed Space Operations Co., Titusville, Fla., NASA's prime contractor for shuttle processing. The team spent the remainder of the week review-

ing procedures, observing shuttle processing activities and interviewing NASA and Lockheed managers and technicians.

In a move away from setting specific target launch dates, the new shuttle schedule will feature a range of dates, with flights in three to five years listed in quarter-year increments, according to top NASA shuttle officials.

The team formulated several recommendations, Lenoir and Ehl said.

These include:

- increasing the amount of specialized training for technicians, who now are trained as generalists;
- greater teamwork within individual technician groups;
- more equitable discipline between technicians and their managers if a task is performed incorrectly; and
- continued attention to worker morale and award recognition.

A final report by the Young team should be produced by the end of November, Ehl said.

Decision on Wide-Area Surveillance Delayed

DELAY, From Page 4

sion. Los Angeles, has identified three different concepts for space-based wide-area surveillance, according to documents obtained by Space News under the Freedom of Information Act.

One system, called a rotating reflector, would use radar to scan a ring-shaped zone of the Earth's surface beneath the satellite. That zone would move as the satellite moved in its orbit.

In its spending blueprint for 1992-1997, the Air Force has committed \$2 billion for develop-

ment of a rotating reflector system.

A more advanced type of radar system, called a phased array agile reflector, would be able to scan several zones beneath the satellite and could move those zones at will, according to the Air Force documents.

The third type of wide-area surveillance system, called a multiple bar scanner, would use infrared sensors to scan a swath of the Earth's surface beneath the satellite.

The Navy has planned to demonstrate an infrared sensor in space in 1995.

Astronomers Propose Radical Fix for Hubble Space Telescope

HUBBLE, From Page 3

two spectrographic instruments, and could provide significant improvements in the performance of the European Space Agency's Faint Object Camera, according to several panel members.

Panel member Roger Angel, an astronomer at the University of Arizona at Tucson, who also serves on the board investigating how Hubble's mirror flaw recurred, said that panel members were in unanimous agreement that this was the fix to go for. The biggest issue is how it takes to put it all together. It would be a sad thing if we spent a lot of time and money on SmartSTAR and delayed the

as 1996, as part of long-standing plans to upgrade the telescope's instruments over its 15-year orbital lifetime. A spectrograph spreads electromagnetic radiation into its component frequencies and wavelengths for detailed study.

NASA Goddard's Bruce Woodgate, principal investigator for the \$100 million advanced spectrograph, confirmed that SmartSTAR "would indeed bring [Hubble's two current spectrographs] to their expected performance... but the reality is that the funding would probably come from our program."

Woodgate and others noted that the second-generation spectrograph will fea-

Another negative weighing against SmartSTAR is that Hubble's High Speed Photometer instrument, also built by the University of Wisconsin, must be removed to clear space for SmartSTAR inside the telescope.

At the space science advisory committee, NASA officials pledged to give extra Hubble observing time before 1993 to the High Speed Photometer if SmartSTAR is approved, noting that only about one percent of scientific proposals on Hubble use the photometer. This instrument measures the intensity of light from stellar sources.

The University of Wisconsin's Robert Bless, principal investigator for the High Speed Photometer, said "obviously,

are the top candidate."

However, the High Speed Photometer has been unable to perform any science to date because of Hubble's inconsistent fine guidance sensors. Hughes Danbury engineers recently discovered errors in the software controlling the guidance sensors, NASA's Weiler said, which led to the telescope being imprecisely focused for the past several weeks. The guidance sensors should perform better once this is corrected, Weiler said.

The University of Wisconsin also is proposing that it build SmartSTAR and insert one of its spare photometer detectors into the device, a configuration it calls SuperSmartSTAR. "Some of the images we could produce with corrective optics

ELLIPSAT APPLIES TO FCC FOR LOW-EARTH ORBIT RADIODETERMINATION/CELLULAR VOICE SYSTEM

Ellipsat Corp.--a joint venture of Interferometrics, Inc., Vienna, Va., and Mobile Communications Holdings, Inc., Washington, D.C.--has applied to the FCC for authority to construct a system of 24 low-earth orbit satellites in elliptical orbits to provide radiodetermination satellite and voice services to the U.S. and domestic offshore points. Ellipsat proposed an initial system of six satellites to be used for radio-determination services while mobile voice services are introduced and said it could have the system operational within 24 months of receiving FCC authority.

Ellipsat said its satellite system would provide "complete interconnection with digital cellular systems now being tested across the nation," using code-division multiple access technology "to maximize spectrum utilization and provide seamless and transparent roaming between terrestrial and satellite services." The cellular interconnection would be supported by a common signaling channel based on the advanced telephony service Signalling System No. 7 standard to permit integration with the public telephone network.

Ellipsat said it plans to function "as a network organizer, with 'value-added partners' of the system providing service to the end user." Such partners might include cellular system operators who want to offer extended geographical coverage into remote areas or other companies serving specialized industries. "Ellipso" system users will be able to obtain satellite service via add-on devices to existing cellular equipment at a "nominal cost," or they may purchase a combined satellite/cellular unit, Ellipsat said.

Ellipsat's miniature "Eyesat-class" satellites would be manufactured and distributed by Interferometrics. Its position determination service will use a "geo-location technique" developed at the Massachusetts Institute of Technology. Ellipsat said its system would cost only a fraction of the cost of geosynchronous systems providing similar capabilities. It said it expects to offer usage charges comparable to current cellular services.

-End-

PanAmSat UPDATES COMPLAINT THAT COMSAT IS UNDERREPORTING INTELSAT LOBBYING EXPENSES

Pan American Satellite has renewed its complaint to the FCC that the Communications Satellite Corp. is underreporting Comsat/Intelsat lobbying expenses on separate international satellite issues. In 1985, the FCC's Common Carrier Bureau directed Comsat to file quarterly reports of Intelsat lobbying expenses on separate satellite issues. Citing overall expenses reported by Intelsat lobbyists under federal laws requiring reports from foreign agents and lobbyists, PanAmSat filed a complaint in 1988 charging Comsat with understating the lobbying expenses in its reports to the FCC.

In its supplementary filing Nov. 15, PanAmSat cited documents filed by Intelsat lobbyists for the last three quarters of 1989 and the first two quarters of 1990 reporting that they received \$97,690,684 from Intelsat. Yet, Comsat reported that only \$2,085 was spent for lobbying on separate satellite system issues during the period, PanAmSat said.

-End-

Cable & Wireless plc's Hong Kong Telecommunications Ltd. affiliate reported profits of \$2422 billion (Hong Kong) or 21.7 cents per share for the six months ended Sept. 30, an increase of 17% over results from the same period a year ago.

-End-

SERVICE LIST

*Chairman Alfred C. Sikes
Federal Communications Commission
Room 814
1919 M Street, N.W.
Washington, D.C. 20554

*Commissioner James H. Quello
Federal Communications Commission
Room 802
1919 M Street, N.W.
Washington, D.C. 20554

*Commissioner Sherrie P. Marshall
Federal Communications Commission
Room 826
1919 M Street, N.W.
Washington, D.C. 20554

*Commissioner Andrew C. Barrett
Federal Communications Commission
Room 844
1919 M Street, N.W.
Washington, D.C. 20554

*Commissioner Ervin S. Duggan
Federal Communications Commission
Room 832
1919 M Street, N.W.
Washington, D.C. 20554

*Cheryl Tritt
Chief, Common Carrier Bureau
Federal Communications Commission
Room 500
1919 M Street, N.W.
Washington, D.C. 20554

*David R. Siddall, Chief
Frequency Allocation Branch
Office of Engineering and Technology
Federal Communications Commission
Room 7102
2025 M Street, N.W.
Washington, D.C. 20554

* Via Hand Delivery

Norman Leventhal, Esq.
Raul Rodriguez, Esq.
Leventhal, Senter & Lerman
2000 K Street, N.W.
Suite 600
Washington, D.C. 20006

Robert A. Mazer, Esq.
Nixon, Hargrave, Devans & Doyle
One Thomas Circle, N.W.
Suite 800
Washington, D.C. 20005

Philip L. Malet, Esq.
Steptoe & Johnson
1330 Connecticut Avenue, N.W.
Washington, D.C. 20036

Veronica Haggart, Esq.
Vice President & Director
Regulatory Affairs
Motorola, Inc.
Suite 400
1350 I Street, N.W.
Washington, D.C. 20005

Leslie Taylor, Esq.
Leslie Taylor Associates
6800 Carlynn Court
Bethesda, MD 20817-4302

Linda Smith, Esq.
Robert M. Halperin, Esq.
Crowell & Moring
1001 Pennsylvania Avenue, N.W.
Washington, D.C. 20004-2505

*Thomas P. Stanley
Chief Engineer
Federal Communications Commission
2025 M Street, N.W.
Washington, D.C. 20554

*Cecily C. Holiday, Esq.
Chief, Satellite Radio Branch
Federal Communications Commission
Room 6324
2025 M Street, N.W.
Washington, D.C. 20554

*Fern Jarmulnek, Esq.
Satellite Radio Branch
Federal Communications Commission
Room 6324
2025 M Street, N.W.
Washington, D.C. 20554

*Kristi L. Kendall, Esq.
Staff Attorney
Federal Communications Commission
Room 6334A
2025 M Street, N.W.
Washington, D.C. 20554

*Raymond LaForge
Federal Communications Commission
Room 7334
2025 M Street, N.W.
Washington, D.C. 20554

Lon Levin, Esq.
Vice President and Regulatory Counsel
AMSC
1150 Connecticut Avenue, N.W.
4th Floor
Washington, D.C. 20036

Bruce D. Jacobs, Esq.
Fisher, Wayland, Cooper & Leader
1255 23rd Street, N.W.
Suite 800
Washington, D.C. 20037

* Via Hand Delivery